CLAIM AMENDMENTS

Claim 1 (withdrawn) A thin-film silicon chemical vapor deposition (CVD) system, comprising:

a deposition chamber with an RF-field generator for spawning a hydrogen plasma proximate to a workpiece substrate;

a silane input for injecting a silane gas into said hydrogen plasma during operation;

a dopant input for injecting p-type impurities, n-type impurities, or no impurities into said hydrogen plasma during operation and providing for alternative depositions of p-type, n-type, and intrinsic silicon layers, respectively, on said workpiece substrate; an exhaust system for removing a deposition gas mixture from the deposition chamber; and a recirculating system for returning silane gas from said hydrogen plasma back to the silane input;

wherein, such provide for a controlled pressure and a consistent concentration of said silane gas in said hydrogen plasma during operation.

Claim 2 (withdrawn) The CVD system of claim 1, further comprising: a controller for admitting silane and impurity dopant gases at their respective inputs at a rate that matches their consumption from said hydrogen plasma during deposition.

Claim 3 (withdrawn) The CVD system of claim 1, further comprising: a controller for exhausting the gas mixture in the chamber at the rate that matches the rate at which reaction products are generated in the deposition process.

Claim 4 (withdrawn) The CVD system of claim 3, further comprising: a filter that concentrates hydrogen place before the exhaust to further prevent input gasses from being exhausted from the chamber and wasted.

Claim 5 (withdrawn) The CVD system of claim 1, further comprising: a sensor for continuously monitoring said deposition gas mixture in the deposition chamber, and for providing a feedback signal that can be used to maintain a particular pressure and a specific concentration of reaction gasses.

Claim 6 (withdrawn) The CVD system of claim 1, further comprising: a feedback control system that receives inputs from sensors that measure pressure, gas concentrations, gas temperature, RF power level, and that adjusts a gas input and a gas exhaust rate, an RF-power level, and a gas temperature to maintain particular deposition conditions.

Claim 7 (withdrawn) The CVD system of claim 1, further comprising: multiple chambers with different gas mixtures in each chamber separated by baffles or buffer regions to minimize the flow of gas from one chamber to the next.

Claim 8 (currently amended) A method of thin-silicon chemical vapor deposition (CVD), comprising:

spawning a hydrogen plasma cloud proximate to a workpiece substrate in a deposition chamber with an RF-field generator;

injecting a ~~silane~~ gas into said hydrogen plasma cloud during operation from a silane input so as to roll said hydrogen plasma cloud into a coaxial vortex;

injecting p-type impurities, n-type impurities, or no impurities into said hydrogen plasma cloud during operation which provides for alternative deposition of p-type, n-type, and intrinsic silicon layers having substantially equal effective concentrations of said p-type and n-type impurities, respectively, on said workpiece substrate; and

receiving a deposition gas mixture from said deposition chamber through an exhaust system; ~~and~~

~~returning silane gas from said hydrogen plasma cloud back to said silane input with a recirculating system;~~

wherein, a controlled pressure and a consistent concentration of said silane gas is provided for in said hydrogen plasma cloud during operation.

Claim 9 (original) The CVD method of claim 8, further comprising: admitting silane and impurity dopant gases at their respective inputs at a rate that matches their consumption from said hydrogen plasma during deposition.

Claim 10 (original) The CVD method of claim 8, further comprising: exhausting said gas mixture in said chamber at a rate that matches said rate at which reaction products are generated in said deposition process.

Claim 11 (original) The CVD method of claim 8, further comprising: selectively passing only hydrogen with a filter before exhausting said system to prevent silane input gasses from being wasted.

Claim 12 (original) The CVD system of claim 8, further comprising: continuously monitoring said deposition gas mixture in said deposition chamber with a sensor, and providing a feedback signal that can be used to maintain a particular pressure and a specific concentration of reaction gasses.

Claim 13 (original) The CVD method of claim 8, further comprising: providing a feedback control system that receives inputs from sensors that measure gas pressure, gas concentrations, gas temperature, RF power level, and that adjusts a gas input and a gas exhaust rate, an RF-power level, and a gas temperature to maintain particular deposition conditions.

Claim 14 (original) The CVD method of claim 8, further comprising: separating multiple chambers with different gas mixtures in each chamber by baffles and buffer regions to minimize a bypass gas flow between chambers.

Please add the following new Claims:

15. (new) The method of Claim 8 wherein said deposition gas mixture is received from said deposition chamber through said exhaust system at approximately twice a rate at which said gas is injected into said hydrogen plasma cloud.

16. (new) The method of Claim 8 further comprising inducing a plurality of roll-vortex plasma clouds within said deposition chamber.

17. (new) The method of Claim 8 wherein said gas comprises high concentration silane.

18. (new) The method of Claim 17 wherein said gas comprises approximately 100% silane.

19. (new) The method of Claim 8 or 17 wherein said step of injecting said gas further comprises:

injecting said gas from a first series of gas injector jets pointed upward in relation to said workpiece substrate; and

injecting said gas from a second series of gas injector jets pointed downward in relation to said workpiece substrate.

20. (new) The method of Claim 19 wherein said first series of gas injector jets are collinear.

21. (new) The method of Claim 19 or 20 wherein said second series of gas injector jets are collinear.

22. (new) The method of Claim 8 wherein said deposition gas mixture that is received from said deposition chamber through said exhaust system has a concentration of silane in hydrogen gas of between about five and fifteen percent.

23. (new) The method of Claim 8, 17 or 19 further comprising recycling said deposition gas mixture received through said exhaust system so as to capture unused silane and to return said silane to be available to be injected into said hydrogen plasma cloud.